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ELECTRONICS

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Jameco Part Number 148639



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## **Declaration of RoHS Conformity**

To minimize the environmental impact and take more responsibility to the earth we live, MEAN WELL hereby confirms that the following product series comply with Directive 2002/95/EC of the European Parliament - RoHS (Restriction of Hazardous Substances).

### **Content of Compliance**

Lead	<0.1 % by weight (1000 ppm)
Mercury	<0.1 % by weight (1000 ppm)
Cadmium	<0.01 % by weight (100 ppm)
Hexavalent Chrome (Cr <sup>+6</sup> )	<0.1 % by weight (1000 ppm)
PBBs	<0.1 % by weight (1000 ppm)
PBDEs	<0.1 % by weight (1000 ppm)

### **Product Series**

Please refer to the attached list for details.

### **Delivery**

**The actual delivery date for RoHS compliance products will depend on our inventory status.**

Please contact our sales representatives for details.

### **How to Recognize**

The serial number on each PSU originally was Cxxxxxxxx and right now will be changed to Rxxxxxxxx or Exxxxxxxx (or add "R" for serial number that only specify the production weeks) for RoHS compliance products for the ease of identification.

Jerry Lin / President  
MEAN WELL Enterprises Co., Ltd.

Product Family	Series
<b>G3</b>	RS-25/35/50/75/100/150, RD-35/50/65/85/125, RID-50/65/85/125, RT-50/65/85/125, RQ-50/65/85/125
<b>G2</b>	S-25/40/60/100F/150/240, T-40, D/ID/T/IT/Q/IQ-60, D/T/Q-120, SC-150
<b>PFC</b>	SP-75/100/150/200/320/480/500/750, USP-225/350, TP-75/100/150, QP-100/150/200/320/375
<b>AD</b>	ADS-55/155, AD-55/155, ADD-55/155
<b>CL/PL</b>	CLG-60/100, PLN-30/60/100
<b>DIN</b>	MDR-20/40/60, DR-30/45/60/75/100/120, DRH-120, DRP-240/480/480S, DRT-240/480/960, DR-RDN20, DR-UPS40
<b>Modular</b>	MP-450/650/1K0, MS-75/150/300, MD-100
<b>Parallel</b>	PSP-500/600/1000/1500, RSP-1000/1500, RCP-1000, RCP-1U
<b>Open Frame</b>	NFM-05/10/15/20, PM-05/10/15/20, PS/PD-25, PS-35, PS/PD/PT-45, PS/PD/PT-65, RPD/RPT-65, PD-110, PQ-100, PPQ-100, PPS/PPT-125, LPS-50/75/100, LPP-100/150, ASP-150, PPS-200, PID-250, MPS-30, MPS/MPD/MPT-45, RPS/RPD/RPT-60, MPS/MPD/MPT-65, RPS/RPD/RPT-75, MPS/MPD/MPT/MPQ-120, MPS/MPD/MPT/MPQ-200
<b>Charger</b>	GC-30, PA/PB/PS-120, ESC/ESP-120, ESC/ESP-240, PB-300/360
<b>Adaptor</b>	GS-06/15/18/25, ES-18/25, P25, P30, P40, P50, P66, U65S, MES-30/50, ATX-100, AS-120P
<b>PC/IPC Power</b>	YP-350J, IPC-200/250/300
<b>DC/DC Converter</b>	SD-25/50/100/150/200/350, SDM30, ASD10H/15H, NSD10/15, SBT, SFT, DET, SRS, SUS, SPR, SPU, SCW, SLW, SKE SKA, DCW, DLW, DKE, DKA, TKA
<b>Inverter</b>	TN/TS-1500, A301/A302
<b>Power Cord</b>	YP** + YC**

**\*\* For other products not listed above, please contact our sales representatives for availability**

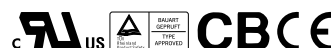
2007.04 update

ISO-9001 CERTIFIED  
Your Reliable Power Partner



#### ■ Features :

- Universal AC input/Full range
- Low leakage current<0.5mA
- Protections: Short circuit / Overload / Over voltage
- Cooling by free air convection
- 100% full load burn-in test
- Fixed switching frequency at 65KHz
- 2 years warranty



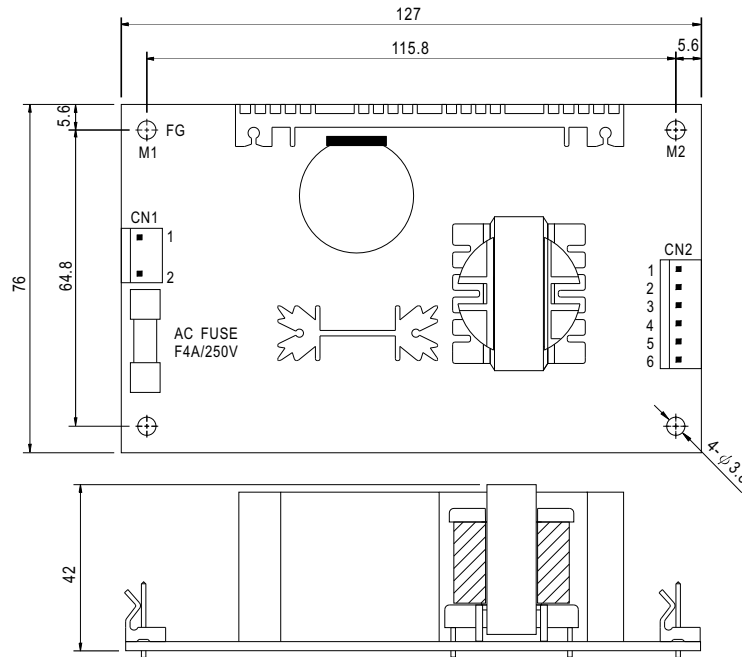
#### SPECIFICATION

MODEL		PS-65-3.3	PS-65-5	PS-65-7.5	PS-65-12	PS-65-13.5	PS-65-15	PS-65-24	PS-65-27	PS-65-48
OUTPUT	DC VOLTAGE	3.3V	5V	7.5V	12V	13.5V	15V	24V	27V	48V
	RATED CURRENT	12A	12A	8A	5.2A	4.7A	4.2A	2.7A	2.4A	1.35A
	CURRENT RANGE	0 ~ 15.2A	0 ~ 13.8A	0 ~ 9.6A	0 ~ 6A	0 ~ 5.4A	0 ~ 4.8A	0 ~ 3A	0 ~ 2.7A	0 ~ 1.5A
	RATED POWER	39.6W	60W	60W	62.4W	63.5W	63W	64.8W	64.8W	64.8W
	OUTPUT POWER (max.)	Rated output power for convection; 72W (+3.3V : 50W; +5V:69W) with 18 CFM min. Forced air								
	RIPPLE & NOISE (max.) Note.2	80mVp-p	100mVp-p	100mVp-p	100mVp-p	100mVp-p	100mVp-p	100mVp-p	100mVp-p	100mVp-p
	VOLTAGE ADJ. RANGE	3.14 ~ 3.63V	4.75 ~ 5.5V	7.13 ~ 8.25V	11.4 ~ 13.2V	12.8 ~ 14.9V	14.25 ~ 16.5V	22.8 ~ 26.4V	25.65 ~ 29.7V	45.6 ~ 52.8V
	VOLTAGE TOLERANCE Note.3	±3.0%	±3.0%	±3.0%	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%
	LINE REGULATION	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%
	LOAD REGULATION	±3.0%	±3.0%	±3.0%	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%
INPUT	SETUP, RISE TIME	800ms, 20ms at full load								
	HOLD UP TIME (Typ.)	60ms at full load								
	VOLTAGE RANGE	90 ~ 264VAC 127 ~ 370VDC								
	FREQUENCY RANGE	47 ~ 440Hz								
	EFFICIENCY(Typ.)	69%	76%	79%	79%	79%	79%	80%	80%	80%
	AC CURRENT (Typ.)	1.2A/115VAC 0.72A/230VAC								
PROTECTION	INRUSH CURRENT (Typ.)	COLD START 20A/115VAC 40A/230VAC								
	LEAKAGE CURRENT	<0.75mA / 240VAC								
	OVERLOAD	73 ~ 105W(3.3V : 51 ~ 75W)(5V : 70 ~ 105W) rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed.								
ENVIRONMENT	OVER VOLTAGE	3.8 ~ 4.46V	5.75 ~ 6.75V	8.63 ~ 10.1V	13.8 ~ 16.2V	15.5 ~ 18.2V	17.25 ~ 20.25V	27.6 ~ 32.4V	31 ~ 36.45V	55.2 ~ 64.8V
	WORKING TEMP.	-10 ~ +60°C (Refer to output load derating curve)								
	WORKING HUMIDITY	20 ~ 90% RH non-condensing								
SAFETY & EMC (Note 4)	STORAGE TEMP., HUMIDITY	-20 ~ +85°C, 10 ~ 95% RH								
	TEMP. COEFFICIENT	±0.04%/°C (0 ~ 50°C)								
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, Period for 60min.each along X, Y, Z axes								
OTHERS	SAFETY STANDARDS	UL60950-1, TUV EN60950-1 Approved								
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:1.5KVAC O/P-FG:0.5KVAC								
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms/500VDC								
	EMI CONDUCTION & RADIATION	Compliance to EN55022 (CISPR22) Class B								
	HARMONIC CURRENT	Compliance to EN61000-3-2,-3								
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204, EN55024, Light industry level, criteria A								
NOTE	MTBF	300.7K hrs min. MIL-HDBK-217F (25°C)								
	DIMENSION	127*76*42mm (L*W*H)								
	PACKING	0.21Kg; 54pcs/14.2Kg/1.35CUFT								

1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.
2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uF & 47uF parallel capacitor.
3. Tolerance : includes set up tolerance, line regulation and load regulation.
4. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.
5. Mounting holes M1 and M2 should be grounded for EMI purposes.

## Mechanical Specification

Unit:mm



AC Input Connector (CN1) : Molex 5277-02 or equivalent

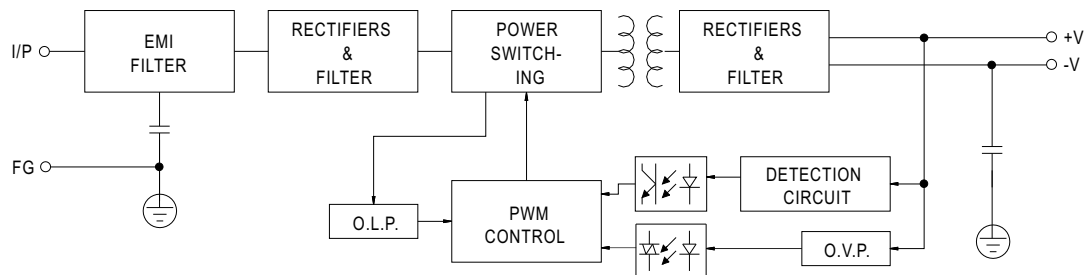
Pin No.	Assignment	Mating Housing	Terminal
1	AC/N	Molex 5195 or equivalent	Molex 5194 or equivalent
2	AC/L		

DC Output Connector (CN2) : Molex 5273-06 or equivalent

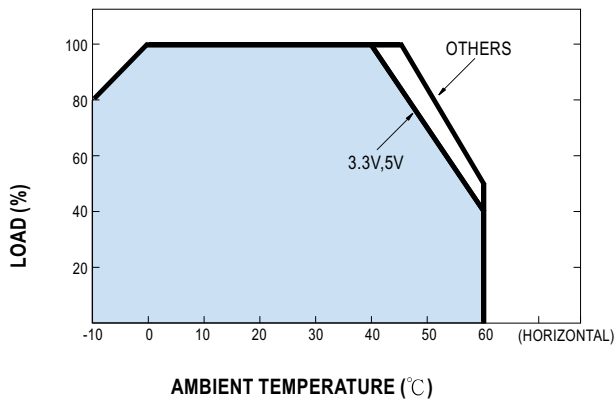
Pin No.	Assignment	Mating Housing	Terminal
1,2,3	+V	Molex 5195 or equivalent	Molex 5194 or equivalent
4,5,6	-V		

## Block Diagram

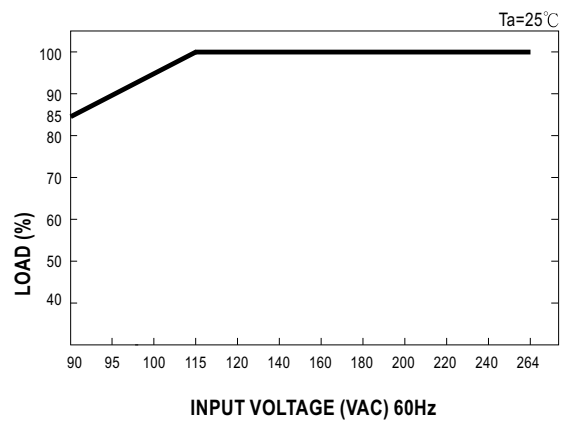
fosc : 65KHz



## Derating Curve



## Output Derating VS Input Voltage



# Quality Engineering Test Report

**SERIES: PS-65 60W WATTS SIGLE OUTPUT SWITCHING POWER SUPPLY OPEN FRAME TYPE**

**SAMPLE:**

<b>A.PS-65-5</b>	<b>5V / 12A</b>	<b>D. PS-65-24</b>	<b>24V / 3A</b>
<b>B.PS-65-12</b>	<b>12V / 5.2A</b>	<b>E. PS-65-48</b>	<b>48V / 1.5A</b>
<b>C.PS-65-15</b>	<b>15V / 4.2A</b>		

NO	TEST ITEM	TEST CONDITION / SPECIFICATION	RESULT	VERDICT
1	AC INPUT VOLTAGE RANGE	I/P:TESTING SPEC:90~264VAC O/P:FULL LOAD	A:65.85VAC~267VAC	P
2	LINE REGULATION	I/P:85~264VAC SPEC: A: $\pm 1\%$ O/P:FULL LOAD B: $\pm 1\%$ C: $\pm 1\%$ D: $\pm 1\%$ E: $\pm 1\%$	A: $\frac{-0.12\%}{\%} \sim 0\% \%$ B: $\frac{0\%}{\%} \sim 0\% \%$ C: $\frac{0\%}{\%} \sim 0\% \%$ D: $\frac{0\%}{\%} \sim 0\% \%$ E: $\frac{0\%}{\%} \sim \frac{0.01\%}{\%}$	P
3	LOAD REGULATION	I/P:230VAC SPEC: A: $\pm 3\%$ O/P: B: $\pm 2\%$ MIN. TO FULL LOAD C: $\pm 2\%$ D: $\pm 2\%$ E: $\pm 2\%$	A: $\frac{-0.24\%}{\%} \sim \frac{+0.36\%}{\%}$ B: $\frac{-0.05\%}{\%} \sim \frac{+0.05\%}{\%}$ C: $\frac{0\%}{\%} \sim \frac{0.04\%}{\%}$ D: $\frac{-0.02\%}{\%} \sim \frac{0\%}{\%}$ E: $\frac{-0.01\%}{\%} \sim \frac{+0.01\%}{\%}$	P
4	OUTPUT VOLTAGE TOLERANCE	I/P:85~264VAC SPEC: A: $\pm 3\%$ O/P: B: $\pm 2\%$ MIN. TO FULL LOAD C: $\pm 2\%$ D: $\pm 2\%$ E: $\pm 2\%$	A: $\frac{-0.5\%}{\%} \sim \frac{+0.24\%}{\%}$ B: $\frac{0\%}{\%} \sim \frac{+0.1\%}{\%}$ C: $\frac{0\%}{\%} \sim \frac{+0.04\%}{\%}$ D: $\frac{-0.02\%}{\%} \sim \frac{+0.02\%}{\%}$ E: $\frac{0\%}{\%} \sim \frac{+0.03\%}{\%}$	P
5	RIPPLE & NOISE	I/P:230VAC SPEC: A:100mV O/P: FULL LOAD B:100mV C:100mV D:100mV E:100mV	A: <u>66mV</u> B: <u>77mV</u> C: <u>21mV</u> D: <u>28mV</u> E: <u>43mV</u>	P
6	AC INPUT CURRENT	I/P:230VAC SPEC: 0.9A O/P:FULL LOAD	A: <u>0.7A</u>	P
7	MAX. INRUSH CURRENT	I/P:230VAC SPEC: 40A O/P:FULL LOAD	A: <u>32.39A</u>	P
8	O/P VOLTAGE ADJ.RANGE	I/P:230VAC SPEC:-5%~+10% O/P:MIN. LOAD A:4.75V~5.5V B:11.4V~13.2V C:14.25V~16.5V D:22.8V~26.4V E:45.6V~52.8V	A:4.28V~6.18V B:9.33V~13.73V C:12.62V~18.85V D:17.23V~27.6V E:38.8V~53.6V	P
9	SET UP TIME	I/P:230VAC SPEC:800ms O/P:FULL LOAD	A: <u>552.86mS</u>	P
10	HOLD UP TIME	I/P:230VAC SPEC:20mS O/P:FULL LOAD	A: <u>93.66mS</u>	P

NO	TEST ITEM	TEST CONDITION / SPECIFICATION	RESULT	VERDICT
11	EFFICIENCY	I/P:230VAC                      SPEC: A:76% O/P: FULL LOAD                      B:79% C:79% D:80% E:80%	A: <u>76.5%</u> B: <u>80.24%</u> C: <u>81.83%</u> D: <u>83.25%</u> E: <u>83.95%</u>	P
12	OVER LOAD PROTECTION	I/P:230VAC                      SPEC: O/P: TESTING                      A: 73~105W B: 73~105W C: 73~105W D: 73~105W E: 73~105W	A: <u>78.84W</u> B: <u>83.56W</u> C: <u>78.74W</u> D: <u>93.44W</u> E: <u>97.67W</u>	P
13	OVER VOLTAGE PROTECTION	I/P:230VAC                      SPEC:115%~135% O/P:TESTING                      A : 5.5V~6.75V B : 13.2V~16.2V C : 16.5V~20.25V D : 26.4V~32.4V E : 52.8V~64.8V	A: <u>6.20V</u> B: <u>14.08V</u> C: <u>19.03V</u> D: <u>28.3V</u> E: <u>53.7V</u>	P
14	GROUND LEAKAGE CURRENT	I/P:240VAC                      SPEC: L-FG---<0.5mA N-FG---<0.5mA	B: L-FG: <u>0.4 mA</u> N-FG: <u>0.4mA</u>	P
15	INSULATION RESISTANCE	SPEC: O/P-FG 500VDC/50MOhms MIN. I/P-O/P 500VDC/50MOhms MIN. I/P-FG 500VDC/50MOhms MIN.	A: O/P-FG > <u>50MOhms</u> I/P-O/P > <u>50MOhms</u> I/P-FG > <u>50MOhms</u>	P
16	DIELECTRIC / WITHSTAND VOLTAGE	SPEC: I/P- O/P: 3000VAC/ 1 sec (10mA CUT-OFF) I/P - FG: 1500VAC/ 1 sec (10mA CUT-OFF) O/P - FG : 500VAC/1sec (10mA CUT-OFF)	A: I/P-O/P : <u>3.38mA</u> I/P-FG : <u>3.52mA</u> O/P- FG : <u>1.93mA</u>	P
17	BURN-IN TEST	I/P: 230VAC O/P:FULL LOAD TA:25.4°C BURN-IN DURATION : 1.33 hrs	A: NON BREAK	P
18	ENVIRONMENT TEST	1.LOW TEMPERATURE TEST I/P:80 VAC                      O/P: <u>FULL</u> LOAD AMBIENT TEMPERATURE:~ <u>8.5</u> °C	AFTER <u>2</u> hrs POWER ON <u>OK</u>	P
		2.HIGH AMBIENT TEMPERATURE FULL LOAD TEST I/P: <u>230</u> VAC                      O/P: <u>FULL</u> LOAD AMBIENT TEMPERATURE: <u>45.1</u> °C	AFTER <u>14</u> hrs NON BREAK	
		3.ACCELERATED LIFE TEST I/P: <u>267</u> VAC                      O/P: <u>FULL</u> LOAD POWER ON : <u>3</u> min                      POWER OFF : <u>5</u> sec AMBIENT TEMPERATURE: <u>85</u> °C AMBIENT HUMIDITY: <u>95</u> %	AFTER 3.5 hrs NON BREAK	

NO	TEST ITEM	TEST CONDITION / SPECIFICATION	RESULT	VERDICT		
19	TEMPERATURE RISE TEST Trise OF PARTS	I/P :230VAC                      AFTER 1.33 hrs BURN-IN O/P :FULL LOAD                TA:25.4°C		*  NOTE1		
		POSITION	P/N		TEMP	Trise
		BD1	BRIDGE DIODE		55.1°C	29.7°C
		Q1	MAIN TRANSISTOR		78.3°C	52.9°C
		T1	MAIN TRANSFORMER COIL		68.1°C	42.7°C
		D4	O/P DIODE		94.1°C	68.7°C
		C5	I/P FILTER CAPACITOR		45.8°C	20.4°C
		C22	O/P FILTER CAPACITOR		74.1°C	48.7°C
		T1	MAIN TRANSFORMER CORE		75.4°C	50°C
		D1	CLAMP DIODE		92.8°C	57.4°C
		LF1	LINE FILTER		49°C	23.6°C
20	LIFE CYCLE	SUPPOSE C22 IS THE MOST CRITICAL COMPONENT I/P:230VAC O/P:FULL LOAD Ta:25°C Tc22:73.7°C Life: 23966 hrs I/P:230VAC O/P:FULL LOAD Ta:40°C Tc22:81.9°C Life: 13575 hrs		P		
21	CRITICAL COMPONENT RECORD ( FOR QC INSPECTION REFERENCE ONLY )	FUSE :4A/250VAC GFE. BRIDGE DIODE :LT KB408G. LINE FILTER :LS TF-484. TRANSFOMER :LS TF-461 POWER SWITCHER :K2545 OUTPUT DIODE :D83-004. OUTPUT CAPACITOR :ELNA 1200uF/16V , 105°C, RJH INPUT CAPACITOR :HITACHI 150uF/400V,85°C P.C.B :PS-65,CEM-1 2 OZSS 127mm x 76.2mm				
DATE	SAMPLE	TEST RESULT	TEST	APPROVAL		
971220	PS-65	NOTE1:WORKING TEMPERATURE>=40°C, OUTPUT SHOULD DERATING	H.C.LIOU	Max Lin		